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STOUT, MICHAEL C				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/524,984

Applicant(s)

CZARNEK, ROBERT

Examiner

MICHAEL C. STOUT

Art Unit

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Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 2/04/2008.
- 2a) ☒ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 3-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 3-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/CDC)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____
- Paper No(s)/Mail Date _____

DETAILED ACTION

This action is a Final action based on Patent Application Number 10/524,984 filed 19 August 2003 and is a first action based on the merits of the application. The Amendment and Argument document(s) filed 29th July 2008 are being considered by the Examiner.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 4-7 are rejected under 35 U.S.C. 102(b) as being anticipated by Lee (US 6,091,029)

Regarding claim 4, Lee discloses a capacitive sensor comprising: an insulating substrate (printed circuit board 400); a first electrode (a fixed electrode 450, see column 4, Lines 24-35 and Figure 2) disposed on a first side of the substrate (see Figure 2); a second electrode positioned on the first side of the substrate in a spaced relation to the first electrode (moveable electrode plate 300, see Figure 2 Column 4, Lines 53-58), at least part of the second electrode configured to move toward or away from the first electrode (center portion of the electrode see Figure 5); wherein: the second electrode

includes a plurality of channels forming a spring mechanism in a body (best seen in Figure 5); a plurality of tabs extend from the body (best seen in Figure 5, comprises holes 305); and each tab is secured to the substrate via a standoff (Figure 4 shows the electrode being secured to the substrate via a standoff).

Regarding claim 5, Lee further discloses the sensor comprising a load transfer button (236) positioned on a side of the second electrode facing away from the first electrode (see Figure 4).

Regarding claim 6, Lee further discloses the sensor comprising electronic circuitry (circuit 410, Column 4, lines 24-36) for determining a capacitance of a capacitor formed by the spaced relation of the first and second electrodes.

Regarding claim 7, Lee further discloses the sensor comprising means (microprocessor 420, see Column 7, Lines 1-4) for communicating with an external monitoring unit.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains.
Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

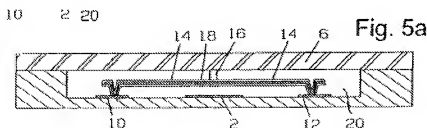
Claims 1 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hsu et al. (6604425).

an insulating substrate (4); a first electrode (2) disposed on one a first side of the substrate (best shown in Figure 5a);

a second electrode (18) positioned on the first side of the substrate in a spaced relation to the first electrode (best shown in Figure 5a), at least part of the second electrode configured to move toward or away from the first electrode (best seen in Figure 5b) in response to an audible sound and fluid pressure waves, while Hsu does not explicitly disclose the electrode configured to move response to a uterine contraction, one of ordinary skill in the art would recognize that an electrode configured

to move in response to an audible sound is capable of moving relative to the reference electrode in response to a uterine contraction; and

a conductive standoff sandwiched between the substrate and the second electrode the upper plate (as can be clearly seen in Figure 6d the structure comprises interconnect anchors 24 which connect the upper capacitive plate to the metal pads 10 and 12) for maintaining the second electrode in spaced relation to the first electrode (see Figure 6d), the conductive standoff electrically coupled to the second electrode and electrically isolated from the first electrode (as best shown in Figure 6c the metalized layer 56 is deposited connecting the metal pads to the upper plate, and insulating layers 54 insulate the metal core of the upper plate from the lower plate electrode, in order for a sensor to measure capacitance between electrodes).



Regarding claim 3, Hsu further teaches the sensor wherein the second electrode comprises a spring mechanism (diaphragm 6, see Column 4, Lines 9-29), wherein the spring mechanism is electrically isolated from the first electrode (as can be best seen in Figures 5a and 4, the upper plate in contact with the spring mechanism is electrically

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isolated from the lower capacitive plate as shown in the circuit diagram in Figure 4), the second electrode maintained in spaced relation to the first electrode (by pip 16).

Claims 11 is rejected under 35 U.S.C. 103(a) and being unpatentable over Hsu et al. or is alternatively rejected as being unpatentable over Hsu et al. (US 6,604,425 B1) in view of Ikeda et al. (US 6,145,384).

Hsu discloses, the sensor comprising a conductive sheet on each side of the substrate (Hsu teaches a conductive sheet 10 and 12 on each side of the substrate adjacent to opposite sides of the reference electrode), wherein: the conductive sheets are electrically connected (the conductive sheets are electrically connected by the diaphragm); the first electrode is electrically isolated from the conductive sheet on the one side of the substrate (the reference electrode is electrically isolated from the sensing electrode); and the second electrode is electrically connected to the conductive sheet on the one side of the substrate (see Figure 5a).

Alternatively Hsu teaches a conductive sheet on a first side of the substrate electrically connected to the dynamic electrode.

Hsu fails to teach the sensor comprising a conductive sheet on the first side of the substrate and a conductive sheet on a second side of the substrate opposite the first side of the substrate.

Ikeda teaches a capacitive sensor wherein the dynamic electrode 161 is electrically connected to the shield electrode 116 which is placed on a second side of a

substrate (130) in order to shield the reference electrodes enable the device to detect small changes, see column 13, lines 22-50, and Column 5, Lines 7-22. Therefore, it would have been obvious to a person of ordinary skill in the art to modify the device taught by Hsu to include electrically connecting the shield and dynamic electrodes as taught by Ikeda in order to detect small changes and provide a driven shield to shield the reference electrode.

Claims 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lee (US 6,091,029)

Regarding claim 8, Lee further comprising means for securing the capacitive uterine contraction sensor against an abdomen (holes 532 for receiving screws to mount the device, see Column 4, Lines 12-24; while Lee fails to teach the securing means comprising a strap or adhesive, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the device to include securing means such as straps or adhesives which are old and well known in the art for the screw means taught by Lee).

Claims 9 is rejected under 35 U.S.C. 102(b) as being anticipated by Lee (US 6,091,029) or in the alternative is rejected under 35 U.S.C. 103(a) as being unpatentable over Lee (US 6,091,029) in view of Satou et al. (US 6,631,645 B1).

Lee discloses the sensor comprising air (a dielectric) between the first and second electrode. Lee fails to disclose a dielectric material other than air between the first and second electrodes.

Satou teaches a sensor comprising a dielectric disposed between a first electrode and second electrode (a dielectric member 20 inserted in the space 7 between two electrodes) in order to adjust the capacitance and thereby adjust the parameters of the sensor.

Both Lee and Satou teach capacitive pressure sensors. Thus it would have been obvious to a person having ordinary skill in the art at the time of the invention to modify the device taught by Lee to include a dielectric between the first and second electrodes as taught in Satou in order to adjust the capacitance and thereby adjust the parameters of the sensor, see Satou Column 6 Lines 15-34.

Claims 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lee (US 6,091,029) in view of Bonin (US 6820493) and in further view of Ikeda et al. (US 6,145,384)

Lee fails to teach the capacitive transducer further comprising a conductive sheet on each side of the substrate, wherein: the conductive sheets are electrically connected; the first electrode is electrically isolated from the conductive sheet on the one side of the substrate; and the second electrode is electrically connected to the conductive sheet on the one side of the substrate; wherein the conductive sheets in combination with the second electrode are configured to form an electric shield around the first electrode.

Bonin teaches a capacitive transducer comprising a moving electrode 13 attached to a substrate (11/16) wherein the substrate comprises a conductive sheet on each side of the substrate in order to shield against electrical interference, see Column 6, Lines 1-26). Therefore, it would have been obvious to a person of ordinary skill in the art to modify the device taught by Lee to include conductive sheets as taught by Bonin in order to provide electrical shielding.

Lee/Bonin fails to teach the sensor wherein the sensing electrode and conductive sheets are electrically connected. Ikeda teaches a capacitive sensor wherein the dynamic electrode 161 is electrically connected to the shield electrode 116 in order to enable the device to detect small changes, see column 13, lines 22-50, and Column 5, Lines 7-22. Therefore, it would have been obvious to a person of ordinary skill in the art to modify the device taught by Lee/Bonin to include electrically connecting the shield and dynamic electrodes as taught by Ikeda in order to detect small changes and provide a driven shield to shield the reference electrode.

Claims 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kodama (US 2003/0187370 A1) in view of Hsu et al. (6604425).

Kodama teaches a uterine contraction sensor comprising a sensing member 26 which may comprise a pressure transducer configured to detect a uterine contraction, see [0027]. Kodama fails to teach the specific pressure transducer.

Hsu teaches a pressure transducer comprising an insulating substrate (4); a first electrode (2) disposed on one a first side of the substrate (best shown in Figure 5a);

a second electrode (18) positioned on the first side of the substrate in a spaced relation to the first electrode (best shown in Figure 5a), at least part of the second electrode configured to move toward or away from the first electrode (best seen in Figure 5b) in response to an audible sound and fluid pressure waves, and

a conductive standoff sandwiched between the substrate and the second electrode the upper plate (as can be clearly seen in Figure 6d the structure comprises interconnect anchors 24 which connect the upper capacitive plate to the metal pads 10 and 12) for maintaining the second electrode in spaced relation to the first electrode (see Figure 6d), the conductive standoff electrically coupled to the second electrode and electrically isolated from the first electrode (as best shown in Figure 6c the metalized layer 56 is deposited connecting the metal pads to the upper plate, and insulating layers 54 insulate the metal core of the upper plate from the lower plate electrode, in order for a sensor to measure capacitance between electrodes).

Both Kodama and Hsu teach devices for detecting an applied load. Therefore it would have been obvious to a person of ordinary skill in the art at the time of the invention to modify the device taught by Kodama to include a pressure transducer as taught by Hsu in order to provide a small low cost sensor, see Abstract.

Claims 4 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kodama (US 2003/0187370 A1) in view of Lee (US 6,091,029).

Regarding claim 4, Lee discloses a capacitive pressure transducer comprising: an insulating substrate (printed circuit board 400); a first electrode (a fixed electrode 450, see column 4, Lines 24-35 and Figure 2) disposed on a first side of the substrate (see Figure 2); a second electrode positioned on the first side of the substrate in a spaced relation to the first electrode (moveable electrode plate 300, see Figure 2 Column 4, Lines 53-58), at least part of the second electrode configured to move toward or away from the first electrode (center portion of the electrode see Figure 5); wherein: the second electrode includes a plurality of channels forming a spring mechanism in a body (best seen in Figure 5); a plurality of tabs extend from the body (best seen in Figure 5, comprises holes 305); and each tab is secured to the substrate via a standoff (Figure 4 shows the electrode being secured to the substrate via a standoff).

Both Kodama and Lee teach devices for detecting an applied load. Therefore it would have been obvious to a person of ordinary skill in the art at the time of the invention to modify the device taught by Kodama to include a pressure transducer as taught by Lee in order to provide a sensor having compact and robust design which affords a long lifespan, see Column 7, Line 40-43.

Regarding claim 8 Kodama further teaches the sensor comprising means for securing the capacitive uterine contraction sensor against an abdomen (slots and strap shown in Figures 3 and 4).

Conclusion

1. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Response to Arguments

2. Applicant's arguments with respect to claims 1-11 have been considered but are moot in view of the new ground(s) of rejection.

The Applicant's arguments are directed to newly presented claim language which is address in the office action above.

Contact Info

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MICHAEL C. STOUT whose telephone number is (571)270-5045. The examiner can normally be reached on M-F 7:30-5:00 Alternate (Fridays).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Max Hindenburg can be reached on 571-272-4726. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/M. C. S./
Examiner, Art Unit 3736

/Max Hindenburg/
Supervisory Patent Examiner, Art Unit 3736

